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ABSTRACT

Several recent studies provide evidence that the choice between private and public schooling among white students is influenced by the racial composition of the local student population. None of these studies, however, examine whether Latinos are also fleeing to private schools in response to black schoolchildren. This study explores the "Latino flight" hypothesis using data from the National Educational Longitudinal Study and a recently released confidential dataset from the National Center for Education Statistics. In probit regressions for the probability of attending private school among Latinos, the study finds a large, positive, and statistically significant coefficient on the black share of the school-age population. The coefficient estimates imply that a 10 percentage point increase in the black share increases the probability of private school attendance by 25.7 to 33.2 percent among Latino 8th graders and 35.2 to 52.2 percent among Latino 10th graders. These results provide evidence of "Latino flight" from public schools into private schools. An appendix presents means of selected variables. (Contains 34 references.) (Author/SM)

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Private Schools and "Latino Flight" from Black Schoolchildren

JCPR Working Paper

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Abstract

Several recent studies provide evidence that the choice between private and public school among white students is influenced by the racial composition of the local student population. None of these studies, however, examines whether Latinos are also fleeing to private schools in response to black schoolchildren. I explore the "Latino flight" hypothesis using data from the National Educational Longitudinal Study (NELS) and a recently released confidential dataset from the National Center for Educational Statistics (NCES). In probit regressions for the probability of attending private school among Latinos, I find a large, positive and statistically significant coefficient on the black share of the school-age population. The coefficient estimates imply that a 10 percentage point increase in the black share increases the probability of private school attendance by 25.7 to 33.2 percent among Latino 8th graders and 35.2 to 52.2 percent among Latino 10th graders. I interpret these results as providing evidence of "Latino flight" from public schools into private schools. I do not find evidence that Latinos respond differently to black schoolchildren than do whites.

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INTRODUCTION

Critics of private school tuition vouchers contend that vouchers will lead to more racial segregation in the nation's schools. Perhaps contributing to these concerns, several recent studies provide evidence that the choice between private and public school among white students is influenced by the racial composition of the local student population. For example, Conlon and Kimenyi (1991), Lankford, Lee, and Wyckoff (1995), Lankford and Wyckoff (1992, 1997), Fairlie and Resch (2002), and Andrews (2002) provide evidence of "white flight" from minorities or blacks, supporting the findings of earlier studies such as Clotfelter (1976) and Coleman, Hoffer, and Kilgore (1982). Although there is a little direct evidence on causes, these studies generally speculate that "white flight" may be due to prejudice, assumptions about the preferences of black schoolchildren and their parents, and the use of the racial composition of a school as a signal of academic quality.

To be sure, however, no consensus has been reached in the literature on the existence of white flight. Buddin, Cordes and Kirby (1998) and Figlio and Stone (1999) find that the probability of attending private school among all students in insensitive to the minority share of the population. In addition, Lankford and Wyckoff (1992) find that white children are more likely to attend public high school when these schools have larger concentrations of black students.[1]

Perhaps, the attention drawn to this question in recent years is not surprising given the threat to school integration posed by "white flight" from minority or black schoolchildren into private schools.[2] Overlooked, however, is that flight by other ethnic and racial groups to private schools may also be detrimental to integration efforts. In particular, an important question is whether Latinos, who represent a rapidly growing proportion of the school-age population, are fleeing to private schools in response to black schoolchildren. The share of the school-age

[1] They find a negative relationship, however, for public elementary students.

population that is Latino is expected to grow from 11.9 percent in 1990 to 21.5 percent by 2020, whereas the white, non-Latino share is projected to decline from 69.3 percent to 55.1 percent (U.S. Bureau of the Census, 1996). None of the previous studies in the literature, however, explores whether the racial composition of the local student population influences private school choice among Latino schoolchildren.

Although there is evidence that black schoolchildren have similarly small or non-existent effects on the academic achievement of white and Latino public school students (Hanushek, Kain, and Rivkin, 2001), there are several other factors suggesting that Latinos may respond differently than whites to the presence of black schoolchildren. First, Latino schoolchildren have a higher likelihood of interacting with black schoolchildren than white schoolchildren. Part of this is driven by patterns of geographical segregation with lower levels of segregation between blacks and Latinos than between blacks and whites.[3] Examining schools directly, the average Latino student attends a school with 11.8 percent black and the average white student attends a school with 8.6 percent black (Orfield and Yun, 1999). I provide additional evidence below of higher levels of integration between Latinos and blacks than between whites and blacks even after controlling for the racial composition of the metropolitan area. Although this comparison suggests that the conditions for flight differ between Latinos and whites, however, it does not provide any intuition on whether Latinos are more or less likely than whites to respond to black schoolchildren.

Related to the issue of segregation, the contact hypothesis posits that close and sustained contact between ethnic and racial groups promotes tolerance by removing negative stereotypes (Allport 1954, Jackman and Crane 1986, and Sigelman and Welch 1993, Stephan 1987, and Powers and Ellison 1995). At a first pass, the contact hypothesis suggests that the higher levels

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[2] Additional threats to school integration include residential flight from blacks (Clotfelter 2001, Crowder 2000) and flight to charter schools (Weiher and Tedin 2002).

of integration between Latinos and blacks than between whites and blacks should lead to more racial tolerance. This interpretation, however, depends on the assumption that Latinos and whites have the same underlying level of tolerance, which may or may not be the case.

Comparisons between white and Latinos in their reported attitudes towards blacks provide mixed results. For example, whites and Latinos report similarly low levels of objections to residential integration with blacks (Bobo and Zubrinsky 1996), but Latinos report more often than whites that blacks were "hard to get along with" relative to how they viewed their own group (Massagli 2000). An examination of whether racial similarity is an important factor in school choice is also unrevealing. Very few students report racial similarity as an important factor in school choice (Schneider, Marscall, Teske and Roch, 1998, and Weiher and Tedin, 2002). Interestingly, however, Weiher and Tedin (2002) find that race is a powerful predictor of which charter schools are actually attended. In the end, it is difficult to compare reported racial attitudes between Latinos and whites because of the social stigma of expressing intolerant views and the subjectivity of questions, but differences between the two groups in economic competition, school and residential integration, and historical relationships with blacks suggest that differences in racial attitudes may exist.

White and Latino schoolchildren may also differ in their ability to attend private school because of high tuition costs or proximity. The average tuition is $2,138 for private elementary schools and $4,578 for private secondary schools (U.S. Department of Education, 2000). Low levels of income are likely to limit the opportunities of many Latino schoolchildren to attend private school relative to white schoolchildren.[4] The median family income among Latino families in 1989 was $25,064, compared to $37,628 among white, non-Latino families (U.S.

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[3] The black/Latino dissimilarity index is more than 10 percentage points lower than the black/white dissimilarity index, and the average Latino lives in a neighborhood in which blacks comprise 10.8 percent of the population compared to 6.7 percent for whites (Logan, 2001).

[4] Using 1990 Census data, Betts and Fairlie (2001) find that ethnic/racial differences in household income explain roughly 30 to 35 percent of the gap in private school attendance rates between native-born whites and all minorities.

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Bureau of the Census 1993). Working in the opposite direction, however, I provide evidence below that Latino schoolchildren live closer to private schools on average than white schoolchildren.

Finally, Latinos and whites may have different attitudes about private school. For example, Latinos are more likely to support private school tuition vouchers than are non-Latinos. Surveys leading up to the November 2000 California ballot conducted by the Public Policy Institute of California indicated that Latinos were less likely to oppose Proposition 38, the 'school vouchers' initiative than were non-Latinos (Baldassare, 2000). In addition, a national poll taken by the Joint Center for Political and Economic Studies indicates that 65 percent of Latinos supported private school tuition vouchers, compared to 48 percent of whites (JCPES, 1997). Taken together, these dissimilarities suggest that inferences about the existence and/or magnitude of "Latino flight" cannot be inferred from the findings for "white flight."

In this paper, I explore the "Latino flight" hypothesis using data from the National Educational Longitudinal Study (NELS) and a recently released confidential dataset from the National Center for Educational Statistics (NCES). This special release, unlike the standard restricted-use version of the NELS, allows one to identify the exact residential location of all members of the National Educational Longitudinal Study (NELS).[5] The NELS is an exceptionally rich data source providing information on many student and parental characteristics, including detailed geographical location, religious affiliation, school characteristics, and racial attitudes, that are not available in other sources, such as the Census or Current Population Survey. Furthermore, the NELS oversamples Latino students.

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[5] The standard restricted-use version of the NELS only contains information on the student's state of residence and the location of attended public schools. Therefore, it has been impossible to identify the exact residential locations of all respondents. The recently released dataset that I use, however, contains demographic data from the 1990 Census at the zip code level for each student in the NELS. With permission from the NCES, I used data from the 1990 Census STF 3B Files and a special matching routine to identify each respondent's residential zip code.

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I use these data to first compare levels of exposure to black schoolchildren among Latinos and whites attending public schools. I then compare income levels, racial attitudes, and distances to private schools. I also document racial differences in private school attendance rates and examine how these patterns contribute to the racial composition of the private and public school systems. To explore the "Latino flight" hypothesis, I examine whether Latinos are choosing to attend private schools in response to the presence of black schoolchildren in the public schools. I also make comparisons to levels of "white flight" from black schoolchildren.

DATA

I use data from the National Educational Longitudinal Study (NELS) and a recently released confidential dataset from the National Center for Educational Statistics (NCES). The NELS follows a national sample of American youths who were enrolled in the eighth grade in 1988 at two-year intervals.[6] In this analysis, I use data from the 1988 base year and the 1990 first follow-up. These two years of data allow me to examine the determinants of attending private school at both the 8th and 10th grade levels.

The data include detailed information on the student and his/her family. In addition to measures of family income and parental education, I use information on religion and racial attitudes, which are not available in most other national data sources. I also append school and community characteristics from various sources to these individual-level data. As noted above, the restricted-use version of NELS that has been available for several years does not allow one to identify the residential location of respondents below the state level. Although the restricted-use version identifies the public schools attended by NELS respondents, it does not identify private schools. This information, however, would be less useful as many private school students are likely to attend schools outside of their immediate residential area.

[6] See Huang, et al. (1996) for more details on the NELS.

To identify residential locations, I use a recently released dataset from the NCES that contains 1990 Census demographic data at the zip code level for each NELS respondent. This dataset, however, does not identify actual zip codes. With permission from the NCES, I use data from the 1990 Census STF 3B Files to match to this dataset, and thus identify each student's zip code. The zip codes are used to calculate distances to private schools and to identify each student's county of residence.[7] After identifying the county of residence I identify the student's PMSA by using the county-based definitions of PMSAs provided on the 1994 USA Counties CDROM.

In the main analysis sample, I include only Latino children who are currently enrolled in school. The categories for race/ethnicity in NELS are mutually exclusive. Thus, there are separate responses for "Hispanic" and "white, non-Hispanic." In most of the analyses, I do not differentiate between Catholic, other religious, and secular private schools due to small sample sizes. I also do not differentiate between religious and secular private schools because both are alternatives to public schooling and the key question in this study is whether Latino children choose to opt out of the public school system in response to large concentrations of black schoolchildren. I am motivated by how this affects the resulting racial composition of the public schools and am less concerned with the type of private school these students attend.

INTERACTION WITH BLACK SCHOOLCHILDREN

Before directly testing the "Latino flight" hypothesis, it is useful to compare levels of racial interaction in the public schools. In particular, within the public school system, are levels of Latino/black segregation higher than levels of white/black segregation? In particular, do

[7] Identifying counties from zip codes, however, is not straightforward as many zip codes cross county boundaries. I therefore use the following algorithm to identify the county of residence. First, I eliminate counties in which the zip code only captures non-residential parts of that county. This step allows assignment of a unique county of residence to approximately 90 percent of the total sample. Second, for the remaining public school students I use the county of the student's school. Third, for the remaining

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Latino schoolchildren have a higher likelihood of interacting with black schoolchildren than do white schoolchildren? The level of interaction with black schoolchildren may have implications for the existence and level of private school flight among Latinos and whites.

To explore these issues, I examine the racial composition of public schools attended by Latinos and make comparisons to the racial composition of public schools attended by whites. It is important to note, however, that the racial composition of a school must be measured relative to the racial composition of the surrounding area. For example, a school located in the Washington, D.C. metropolitan area with the same percentage of black students as a school located in the Minneapolis metropolitan area implies a different level of segregation. Therefore, I use the difference between the black share of the student's school and the black share of the student's PMSA as a measure of school segregation.[8] I calculate this measure for Latino and white 8th and 10th-grade students and report the results in Figures 1-2.

The results presented in Figures 1-2 paint a clear picture: Latino schoolchildren are more likely to interact with black schoolchildren than are white schoolchildren. For example, 9.9 to 12.3 percent of Latinos attend public schools that have substantially larger concentrations of blacks than their PMSAs (defined as having black shares that are at least 15 percentage points greater than the share of blacks in the PMSA). In contrast, only 4.2 to 4.9 percent of white public school students attend schools with this level of interaction with black schoolchildren. At the other end of the distribution, Latinos are much less likely than whites to attend public schools with relatively low percentages of black students. Only 11.0 to 11.4 percent of Latinos attend public schools that have a black share difference of less than 15 percentage points, whereas 23.1 to 24.7 percent of whites attend these types of schools.

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private school students I use the county that represents the largest fraction of the total population for that zip code.

[8] Previous studies argue that racial integration should be measured at the class level due to the presence of tracking (see Chubb and Moe 1996 and Greene 1999 for example). I do not follow this approach because of small black and Latino sample sizes.

Overall, these results indicate that Latinos are more likely than whites to interact with blacks in the public school system holding constant the racial composition of the metropolitan area. Although these results do not suggest whether Latinos are more or less likely to respond to blacks than whites, they indicate the possibility that Latinos may respond differently to black schoolchildren than whites. Of course, there may be many other factors that differ between Latinos and whites, and that have an important effect on racially motivated flight to private schools. I examine a few relevant factors below.

LATINO/WHITE DIFFERENCES IN INCOME, PROXIMITY TO PRIVATE SCHOOLS, AND RACIAL ATTITUDES

Latinos may have fewer opportunities to flee to private schools than whites. Perhaps the most important constraint is that Latinos have lower levels of family income than whites. In Table 1, I report estimates of family income in 1987-88 for Latino and white 8th graders. Only categorical responses are available in the NELS. The results clearly indicate that Latino schoolchildren live in families with substantially lower levels of income. For example, 37.5 percent of Latino schoolchildren have family incomes of less than $15,000, whereas only 14.1 percent of white schoolchildren have family incomes at this level. Furthermore, whites are more than two and a half times as likely to have family incomes of at least $50,000 than are Latinos and are nearly 4 times as likely as Latinos to have family incomes of at least $100,000. The lower levels of family income may limit racially motivated private school flight among Latinos.

Another potential constraint to private school flight is that private schools are less likely to be located in the geographical areas in which Latinos live. Concerns about the accessibility of private schools across different racial groups have been important in debates over private school tuition vouchers. In Table 1, I report the average distance to the closest school for both Latinos and whites. I create this variable by first identifying the longitude and latitude of all zip codes in the United States. For each NELS respondent I then calculate the distance to every private school

with at least 100 students.[9] Surprisingly, Latinos live closer to private schools on average than do whites. They live an average of 5.3 kilometers away from the closest private school, which is nearly half the average distance for whites. Therefore, racially motivated flight to private schools among Latino schoolchildren should not be limited by a lack of proximity to private schools.

Previous studies speculate that one of the underlying causes of "white flight" may be personal prejudice against black or minority schoolchildren (Conlon and Kimenyi 1991 and Lankford and Wycoff 1997).[10] Latinos and whites may differ in their levels of personal prejudice toward black schoolchildren. The NELS contains a variable that provides some suggestive evidence related to this hypothesis. Students were asked the following question on the 10th grade survey: "How often do you feel it is 'OK' for you to make racist remarks?"[11] Respondents were allowed to choose one of the following responses: (i) "Often", (ii) "Sometimes", (iii) "Rarely", and (iv) "Never." I report estimates of the percentages of Latinos and whites providing each of these possible responses. Interestingly, Latino and white 10th graders do not differ substantially in their responses to this question. Slightly more white schoolchildren than Latino schoolchildren report feeling that it is okay to make racist remarks "often," "sometimes," or "rarely." Although the "racist remarks" question in the NELS is very subjective and much caution is warranted in interpreting these results, they do not provide evidence suggesting that Latino and white schoolchildren have different racial attitudes. In the end, however, it is difficult to make comparisons as Latinos and whites may differ in how they view what constitutes a "racist remark" and how they react to the social stigma of the question.

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[9] I thank Todd Elder for providing a Matlab program that calculates the distance between any two points given their longitude and latitude. A Fortran version of the program is available at the National Oceanic and Atmospheric Administration, National Geodetic Survey web page: ftp://ftp.ngs.noaa.gov/pub/pcsoft/for_inv.3d/source/inverse.for. Private school zip codes are obtained from original records of the 1989-90 Private School Survey. I obtained a special listing from Steve Broughman at the NCES.

[10] Fairlie and Resch (2002) examine whether racially motivated private school flight is stronger among white children who "feel it's okay to make racist remarks" than among other white children. All of their estimates, however, are statistically insignificant at conventional levels.

[11] The parents are likely to make the school sector choice, but we expect that a child's response to this question partly reflects his/her parents' attitudes towards race.

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PRIVATE SCHOOL ENROLLMENT RATES BY RACE

In Table 2, I report private school enrollment rates by race for 8th grade students in 1987-88 and 10th grade students in 1989-90. By using sample weights provided by the NELS, the estimates are representative of the U.S. population of 8th and 10th graders in 1987-88 and 1989-90, respectively. The estimates indicate that Latino schoolchildren are less likely to attend private school than white schoolchildren, but are more likely to attend private school than black schoolchildren.[12] Among Latino 8th and 10th graders, 9.5 and 8.4 percent attend private schools, respectively. In contrast, only 7.1 percent of black 8th graders and 6.9 percent of black 10th graders attend private school. Slightly more than 13 percent of white 8th graders and 11 percent of white 10th graders attend private school.

These estimates imply that black schoolchildren are underrepresented in the private school system relative to the public school system. Table 3 also reports aggregate racial compositions in public and private schools. As expected from the patterns in private school rates, the black share of all private schoolchildren is much smaller than the black share of all public schoolchildren. Blacks comprise 12.5 to 14.0 percent of all public schools students, but only 7.7 to 7.8 percent of all private school students. Latinos also comprise a lower percentage of all private school students than public school students, but the difference is not as large.

The racial composition of Catholic schools is also reported. From 83.1 to 88.6 percent of Latinos attending private schools attend Catholic schools. The results indicate that blacks remain underrepresented in Catholic schools relative to public schools, although the difference is not as large as for all private schools. The results for Latinos, however, differ from above. Latinos comprise 10.8 and 9.3 percent of all 8th- and 10th-grade Catholic school students, respectively. These shares of all Catholic school students are similar to those for all public school students.

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[12] The relative patterns are similar for estimates of primary and secondary private school rates for an urban sample from the 1990 Census as reported in Betts and Fairlie (2001).

At the aggregate level there appears to be a high level of racial sorting into the private and public school systems. From these patterns, we might suspect that if "Latino flight" from black schoolchildren occurs it should be, on average, from public schools into private schools.

PRIVATE SCHOOL FLIGHT AMONG LATINOS

To test the "Latino flight" hypothesis, I first create and estimate a reduced-form equation for private school attendance. I assume that private school is determined by an unobserved latent variable,

(6.1) $Y_i^* = X_i'\beta + \varepsilon_i$,

where X_i includes student, parental, school and geographical area characteristics, and ε_i is the disturbance term. Only the dichotomous variable, Y_i, is observed, however. It equals 1 if $Y_i^* \geq 0$ (denoting private school attendance) and equals 0 otherwise (denoting public school attendance). If we take ε_i to be normally distributed, the assumptions imply that the data are described by a probit model. Although the normality assumption should only be taken as an approximation, the probit model provides a useful descriptive model for the binary event that a student attends private school.

A complication arises, however, in the use of a standard probit regression because the NELS includes an oversample of private school students. To correct for this problem I use a choice-based sampling maximum likelihood estimator (CBSMLE).[13] The likelihood function for this estimator is weighted to account for the oversample of ones for the dependent variable. Observations in which Y=0 and Y=1 are given weights of P^W/P^U and $(1-P^W)/(1-P^U)$, respectively, where P^W is the private school rate calculated using sample weights provided by the NELS, and P^U is the unweighted private school rate.

[13] See Amemiya (1985) for more details.

I estimate several choice-based sample corrected probit regressions for the probability of attending private school using a sample of Latino students. In addition to measures of student, parental, school and geographical area characteristics, I include the black share of the school-age population. The coefficient on this variable provides evidence on whether the private/public school choices of Latino schoolchildren are sensitive to the presence of black schoolchildren.

I measure the black share of the population at both the county and PMSA-levels. The main advantage to using the county-level measure is that it captures a smaller geographical area, and is thus less likely to suffer from problems associated with aggregating heterogeneous areas. There are a few disadvantages, however, to using the county-level measure. The first of these is particularly important. Suppose that Latinos respond to high concentrations of blacks not by enrolling their children in private school, but instead by moving to other neighborhoods where the public schools have fewer black students. This may cause an upward bias on the coefficient estimate for the black proportion of the population if one focuses on narrow geographic areas such as counties. Specifically, any movement from high-black school districts to low-black school districts increases the private school rate in the sending district and decreases the private school rate in the receiving district, thus implying a larger positive correlation between the private school rate and the minority share. In contrast, the use of PMSAs as the unit of analysis greatly reduces this problem because these areas typically encompass many neighborhoods.[14]

A second but related rationale for using PMSAs concerns the endogeneity of households' location more generally. Families are more likely to move between districts or counties within a PMSA as a result of variations in school quality than they are to move between PMSAs. Moves between PMSAs are likely to be influenced mainly by factors apart from schooling, such as the availability of jobs or the presence of family members. This suggests that the simultaneity of

[14] It would also be interesting to examine whether Latino families move to alternative school districts or counties in response to black schoolchildren. However, it is difficult to distinguish between whether the locational choices of Latinos are determined by the presence of blacks in the public schools or by the presence of blacks in the neighborhood. These issues are beyond the scope of this paper.

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location decisions and school sector choices poses less of a problem when the unit of analysis is the PMSA than when it is a smaller geographical area, such as a county.

The third justification for using PMSAs as the unit of analysis is that they more accurately represent markets for private schools than do counties or school districts. Certainly, many families send their children across county lines to private schools.

Taking these arguments into consideration, I estimate separate regressions using PMSA and county-level measures of the black share of the school-age population.[15] I first discuss the results for the PMSA-level measures (reported in Specifications 1 and 2 of Table 3). I estimate separate regressions for the samples of 8th- and 10th-grade students. In addition to the black share variable, I include controls for age, sex, country of birth, number of siblings, religion, parental education, family income, distance to the closest private school, private and public school quality, poverty rate, and crime.[16] The coefficients on the individual-level variables generally have the expected signs. The probability of attending private school increases sharply with mother's and father's education level, and family income. Surprisingly, the main exception is that religion appears to have little effect on the private school attendance probability. The coefficient on the Catholic religion dummy variable is statistically insignificant in both specifications. The coefficient estimates on the school and geographical area variables are generally statistically insignificant. The standard errors on these variables are adjusted for including multiple observations per PMSA. This is important in an individual-level equation that includes aggregate market variables because the downward bias in OLS standard errors can be extremely large (Moulton 1986). I estimate Huber-White corrected standard errors.

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[15] The NELS sample of Latino eighth-graders resides in 155 different PMSAs and 333 different counties in the United States. The Latino tenth-graders reside in 132 different PMSAs and 272 different counties. These observations are fairly spread out across PMSAs and counties as roughly 75 and 85 percent of the PMSAs and counties represented in the sample contain 10 or fewer observations, respectively.

[16] Means are reported in the Appendix. The public school student to teacher ratio, expenditures per pupil and graduation rate variables are from the Common Core of Data (CCD). The state-level private student to teacher variable is from the 1989-90 Private School Survey as reported in the 1993 Digest of Education Statistics. The serious crime rates for 1987 and 1989 are from the 1994 USA Counties CDROM.

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I now turn to the results for the black share of the school-age population.[17] In both specifications, the coefficient estimate is positive and statistically significant. The estimates also imply fairly large effects. Among Latino 8th graders, a 10 percentage point increase in the black share increases the probability of private school attendance by 0.037, which represents 33.2 percent of the Latino private school rate.[18] The effect among Latino 10th graders is even larger. A 10 percentage point increase in the black share increases the private school rate by 0.052 or 52.2 percent. These results are consistent with "Latino flight" to private schools in response to large concentrations of black schoolchildren.

I also estimate probit regressions that include county-level measures of the black share of the population, public school student to teacher ratio, public school expenditures per pupil, public school graduation rate, poverty rate and crime rate (reported in Specifications 3 and 4). The number of observations used in these regressions is larger because many NELS respondents live in counties that are located outside of PMSAs. The coefficient estimates on the controls do not differ substantially from the PMSA-level regressions. More importantly, however, the coefficient estimates on the black share are large, positive and highly significant.[19] The coefficients using the county-level measures imply that a 10 percentage point increase in the black share increases the private school probability by 0.026 (25.7 percent) among 8th graders and 0.031 (35.2 percent)

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[17] This variable is obtained from the Census STF 3C files. I define the school-age population as ages 5-18 in both specifications. I also estimate probit-regressions in which I measure the black share for ages 5-14 using the 8th-grade sample and the black share for ages 14 to 18 using the 10th grade sample. The coefficient estimates are very similar to the reported estimates (due to the high degree of collinearity between the measures). I argue that the entire age range is a more appropriate measure as Latino parents may simply use the race of all children in the local area to make inferences about the racial composition of the public schools.

[18] These estimates are calculated by multiplying the coefficient estimate by the average derivative adjustment factor reported at the bottom of Table 4. The average derivative adjustment factor is $\Sigma\beta_i\phi(X_i'\beta)/N$, where β_i is the coefficient on the minority share and ϕ is the normal probability density function. The effect of a one unit increase in any of the independent variables on the private school probability can be estimated by multiplying the coefficient on that variable by the average derivative adjustment factor.

[19] These estimates and those using the PMSA-level measure are not sensitive to outliers. I removed all observations in which the black share was less than 0.01 and greater than 0.50 (which represents 9 to 27 percent of the original samples) and found similar coefficient estimates.

among 10th graders. Thus, the county-level regressions provide additional evidence of "Latino flight" from black schoolchildren.

As a check of the robustness of these results, I estimate three additional sets of probit regressions. Table 4 reports results for the black share coefficients.[20] First, I estimate regressions that do not include the distance variables because of the potential endogeneity issues associated with this variable. The black share coefficient estimates are very similar. They remain statistically significant and range from 2.0230 to 3.9309. Second, as noted above many values for religion and family income variables are missing for the NELS sample. In the main specifications, I include dummy variables for these missing values to increase the sample size. As a robustness check, I estimate a set of probit regressions that exclude these observations. Although the sample sizes decline by 18 to 23 percent, the coefficients do not change appreciably and three of the four remain statistically significant at conventional levels. The coefficients range from 2.1667 to 3.7622. Finally, I estimate 10th-grade regressions that include 8th-grade test scores. The coefficient on the PMSA-level black share is 4.6478, and the coefficient on the county-level black share is 2.8247. Both of these coefficients are statistically significant and larger than in the main specification.

To summarize, I find that the black share of the school-age population measured at both the PMSA and county levels has a positive and statistically significant effect on the probability of private school attendance among Latino schoolchildren. These results are robust to alternative specifications and samples, and provide evidence that Latino students enroll in private schools in response to large concentrations of black students.

I should note, however, that as with any cross-sectional analysis these results are potentially biased due to omitted variables. Although I have included a long list of individual and family characteristics, geographical controls, school-quality measures, and local area characteristics, there may exist additional factors that are correlated with both the black share of

the population and the private/public school choices of Latinos. In particular, my regressions may not have completely controlled for difference in school quality. The main concern is the possibility that Latinos are simply trying to avoid low-quality school systems in which blacks may disproportionately attend. To be sure, I include several measures of school quality, such as the student to teacher ratio, expenditures per pupil and high school completion rate, however, these may not be enough. In particular, it would be useful to include a measure of average changes in test scores in public schools. Unfortunately, no national standard test scores were available in 1990. NELS includes a standardized test score, but this is only for individual students in the sample. NELS does not provide information on average test scores for students' schools.

Transitions from Private to Public School

Another empirical approach to examining the "Latino flight" hypothesis is to identify the determinants of transitions between the private and public school systems. In particular, the finding that the black share increases the probability that a student switches from public to private school or decreases the probability that a student switches from private to public school is consistent with the "Latino flight" hypothesis. The NELS contains observations for the same students in both the 8th and 10th grades. I examine whether the black share of the school-age population affects the probability that a student switches from private school in the 8th grade to public school in the 10th grade. I would also like to examine the determinants of transitions from public school in 8th grade to private school in 10th grade, however, there are only 8 out of 1628 public 8th graders making this transition. The sample sizes for the transition from private school to public school are higher (52 out of 185), but remain relatively small.

I estimate several probits for the probability of a transition from private to public school. The dependent variable in these probit regressions equals 1 if the student switches from a private

[20] Although not reported, I also check the sensitivity of results to outliers.

school in 8th grade to a public school in 10th grade and equals 0 if the student remains in a private school in both grades. I briefly discuss the results. As expected, many of the coefficients have the opposite sign as those reported in Table 3. For example, the estimates indicate that the probability of a transition from private to public school decreases with family income and father's education. This is consistent with the positive coefficients found in the cross-sectional regressions. Turning to the results for the black share of the school-age population, I find negative point estimates for the black share in both the PMSA-level and county-level specifications. However, the coefficient in the county-level specification is not statistically significant, and the coefficient in the PMSA-level specification is not robust to alternative specifications.[21] With the standard set of controls the coefficient in the PMSA-level specification equals -14.3673. After removing the high school completion rate, crime rate and poverty rate it drops to -5.3672. The sensitivity of this estimate may have to do with the small sample sizes and high level of correlation between these measures and the black share.

Although these results are only suggestive, they are useful in checking the robustness of the signs of my cross-sectional estimates. For both levels of analysis, the point estimates are negative, which is consistent with the positive coefficients found earlier and with the "Latino flight" hypothesis.

Comparison to Estimates of "White Flight"

As noted above, several recent studies provide evidence of "white flight" from black schoolchildren (see Conlon and Kimenyi 1991, Lankford, Lee, and Wyckoff 1995, Lankford and Wyckoff 1992, 1997 and Fairlie and Resch 2002, Andrews 2002 for example). Using data from the NELS, I estimate several choice-based sample corrected probit regressions

[21] The black share coefficient in the county-level probit regression is -1.936 with a standard error of 2.808. The point estimate implies that a 10 percentage point increase in the black share decreases the private to public transition probability (mean=0.279) by 0.046.

for the probability of attending private school among a pooled sample of white, non-Latino, black and Latino students. I include an interaction between white race and the black share to examine whether Latinos and whites differ in how they respond to black schoolchildren. Panel I of Table 5 reports estimates. For brevity, I only report estimates for race dummies, the black share, and race/black share interactions although all controls are included.

I generally find large positive and statistically significant coefficients on the white race dummy variable. White children are more likely to attend private school, even after controlling for parental education, family income, school-quality, and other characteristics. The main effect, represented by the black share coefficient, remains large, positive and statistically significant in all specifications. Therefore, the pooled estimates do not change the conclusions regarding the effect of the black share on private/public school choices of Latinos.

Of most interest, however, are the white race/black share interaction coefficients. The coefficients provide an estimate of the difference between the effect of the black share on the probability of private school attendance among whites and the effect of the black share on the probability of private school attendance among Latinos. In all of the specifications, the white/black share interaction coefficient is statistically insignificant. Furthermore, the point estimates are positive in two specifications and negative in two specifications. Overall, these estimates do not provide evidence that Latinos and whites respond differently to large concentrations of black schoolchildren.

The probit regressions reported in Panel I of Table 5 also include a black race and black race/black share interaction variable. The interaction coefficient is large and negative in all specifications, but is statistically insignificant. The lack of statistical significance makes these results difficult to interpret. The large and negative point estimates may suggest that blacks are less likely to respond to the black school-age population than are Latinos, which is consistent with "Latino flight" being partly driven by prejudice. On the other hand, the sum of the main effect and black interaction point estimates remains positive in all specifications suggesting that

other factors may be partly responsible for flight. The total effect for blacks, however, is not statistically different from zero in any of the specifications. Overall, these findings are interesting, but unfortunately do not shed light on the existence or causes of "Latino flight."

"Latino Flight" among more Advantaged Students

Do more-advantaged Latinos respond differently to black schoolchildren than their less-advantaged counterparts? Similar to the motivation for comparing levels of "white flight" to "Latino flight" these groups may differ in their response to black schoolchildren in the public schools. In particular, advantaged and disadvantaged Latinos may have different racial attitudes towards blacks due to differences in levels of integration and perceived competition with blacks. The estimates reported above indicate that higher levels of family income and parental education have a strong positive effect on the probability of private school attendance among Latinos. These estimates, however, do not tell us whether advantaged Latinos respond more to large concentrations of black schoolchildren than do disadvantaged Latinos. Socioeconomic differences in Latino flight may be especially troubling for public school administrators and teachers in large urban school districts. If the most advantaged Latino students along with white students increasingly opt to attend private schools then the remaining schoolchildren may be denied important opportunities for positive peer group effects. In addition, public support for these schools may erode, resulting in fewer resources.

I examine this hypothesis by interacting the black share of the school-age population variable with the student's family income and parental education level. Results are reported in Panels II and III of Table 5. I first discuss the results in which I include an interaction between the black share and a dummy variable for family income of $35,000 or more. I find positive coefficients in two of the specifications and negative coefficients in the remaining specifications. None of the coefficients, however, is statistically significant. Therefore, the estimates do not provide evidence that "Latino flight" differs by family income.

In Panel II of Table 5, I also include an interaction between the black share and a dummy variable indicating whether the student has at least one college-educated parent. Similar to the results for family income, none of the interaction coefficients is statistically significant. Apparently, Latinos who have college-educated parents do not respond more to large concentrations of black schoolchildren.

The coefficient estimates on the family income and parental education interactions are statistically insignificant in all cases and small in magnitude in most cases. The signs on these coefficients are also inconsistent. Therefore, the estimates do not provide evidence suggesting that advantaged and disadvantaged Latinos differ in their response to black schoolchildren.

CONCLUSIONS

Using data from the National Educational Longitudinal Study (NELS) and a recently released confidential dataset from the National Center for Educational Statistics (NCES), I explore the "Latino flight" hypothesis. I find a large, positive and statistically significant coefficient on the black share of the school-age population in probit regressions for the probability of attending private school among Latinos. The coefficient estimates imply that a 10 percentage point increase in the black share increases the probability of private school attendance by 25.7 to 33.2 percent among Latino 8th graders and 35.2 to 52.2 percent among Latino 10th graders. I also estimate probit regressions using a sample of non-Latino whites. I do not find evidence that Latinos respond differently to black schoolchildren than do whites.

I interpret these results as providing evidence of "Latino Flight" from public schools into private schools. Although the results are fairly robust to alternative specifications and samples, nevertheless, they are potentially biased due to omitted variables. In particular, it is very difficult to completely control for differences in school quality. The regressions include several of the measures of school quality used in the literature, however, the positive estimates may be partially due Latinos avoiding low-quality school systems in which blacks may disproportionately attend.

Further research using alternative methodologies and data may shed light on this possibility and is needed before a definitive conclusion can be reached.

Although several previous studies focus on whether the choice between private and public schools among white students is influenced by the racial composition of the local student population, similar choices among Latino students also pose a threat to school integration. It is especially important in light of the rapidly growing share of the school-age population represented by Latinos and the higher likelihood of Latinos than whites interacting with blacks in the nation's public schools. Furthermore, Latinos show strong support for voucher programs suggesting that "Latino flight" into private schools may increase substantially if these programs become widespread. Assuming that the results of this study are due to race (i.e. racism, peer group effects, etc...) and are not due to a spurious correlation, they provide suggestive evidence that the introduction of private school vouchers may lead to increased segregation as families have increased opportunities to enroll their children in homogenous schools. The impact on segregation is an especially important concern given the 2002 Zelman v. Simmons-Harris Supreme Court decision allowing private school tuition vouchers to be used at religious schools. In the end, however, a definitive answer to whether private school vouchers will increase or decrease racial and specifically Latino/black segregation in the nation's schools is only possible after several large-scale and long-term experimental programs are implemented and evaluated.

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Figure 1
Racial Composition of Public Schools
Attended by Latino and White Students
NELS 8th Grade

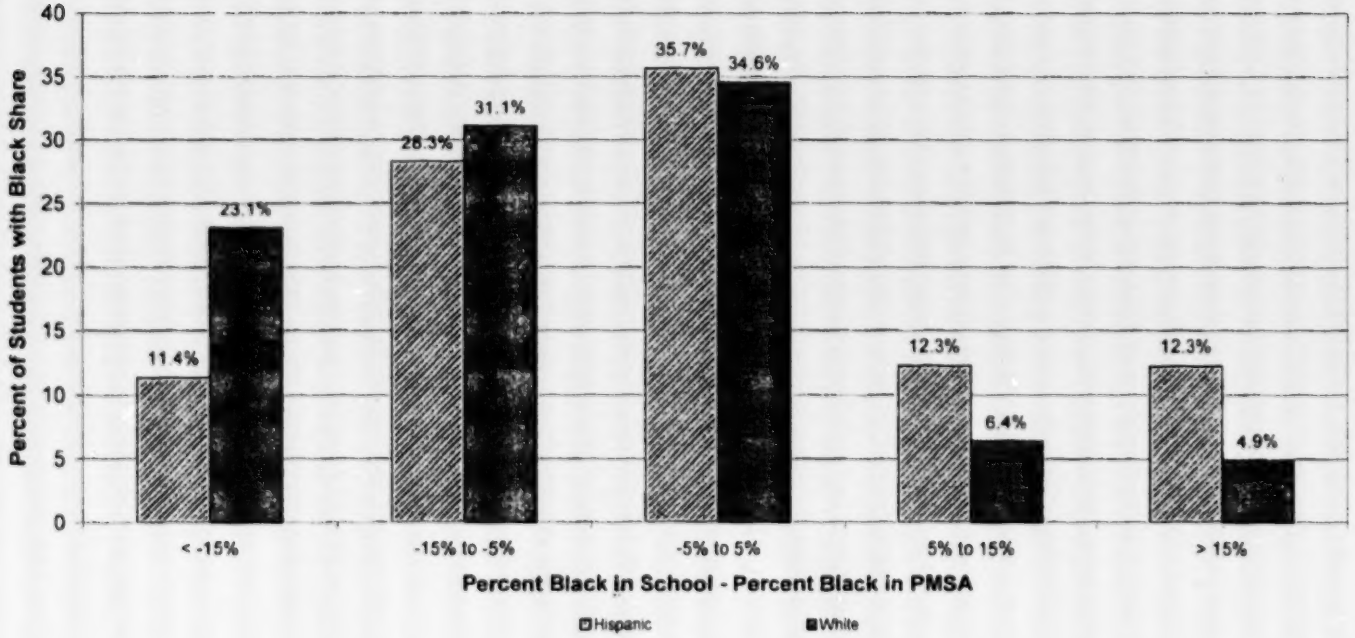

Figure 2
Racial Composition of Public Schools
Attended by Latino and White Students
NELS 10th Grade

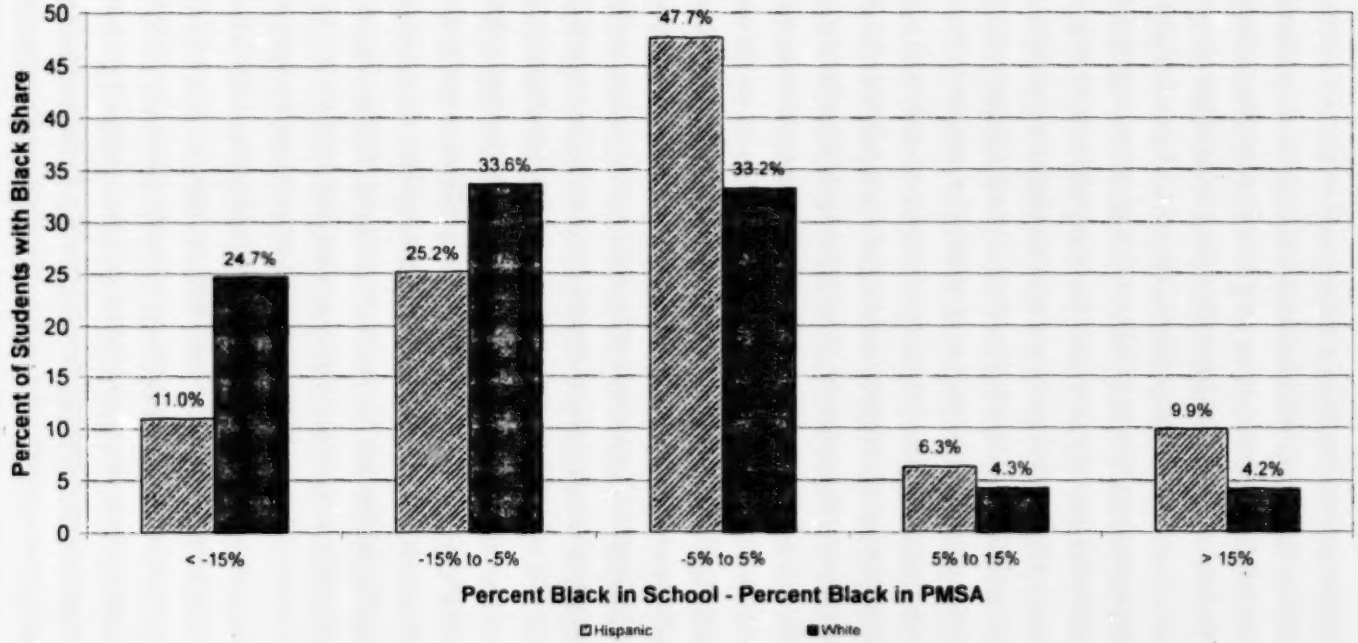

Table 1. Selected Characteristics of Latino and White Schoolchildren

	Latinos	Whites
Family Income Level		
$0 - $15,000	37.5%	14.1%
$15,000 - $25,000	23.6%	17.4%
$25,000 - $35,000	15.9%	20.0%
$35,000 - $50,000	13.5%	23.5%
$50,000 - $100,000	8.3%	20.7%
$100,000+	1.2%	4.4%
Sample Size	2603	14667
Average Distance to Closest Private School (Km)	5.3	10.3
"How often do you feel it is 'OK' for you to make racist remarks?"		
Often	1.1%	2.2%
Sometimes	2.8%	3.1%
Rarely	8.6%	11.2%
Never	87.5%	83.6%
Sample Size	1,940	11,657

Note: All estimates are calculated using sample weights provided by the NELS

Table 2. Private School Enrollment Rates by Race and Racial Composition of Public and Private Schools

	8th Grade (1987-88)		10th Grade (1989-90)	
	Percent	N	Percent	N
Private School Enrollment Rates				
White, Non-Latino	13.2%	16,317	11.2%	11,537
Black	7.1%	3,009	6.9%	1,517
Latino	9.5%	3,171	8.4%	1,901
Public School Enrollment Shares				
White, Non-Latino	70.6%	12,343	73.7%	9,676
Black	14.0%	2,565	12.5%	1,370
Latino	10.7%	2,772	9.6%	1,759
Private School Enrollment Shares				
White, Non-Latino	78.4%	3,974	78.7%	1,861
Black	7.7%	444	7.8%	147
Latino	8.2%	399	7.4%	142
Catholic School Enrollment Shares				
White, Non-Hispanic	74.5%	1,832	74.1%	697
Black	9.9%	294	11.3%	92
Latino	10.8%	309	9.3%	98

Note: Estimates are calculated using sample weights provided by the NELS.

Table 3. Probit Regressions for Probability of Attending Private School among Latinos

	Specification			
	PMSA-Level		County-Level	
	8th Grade	10th Grade	8th Grade	10th Grade
Explanatory Variables	(1)	(2)	(3)	(4)
Female	0.0448	-0.0188	0.0659	-0.0025
	(0.0647)	(0.1646)	(0.0545)	(0.1229)
Number of Siblings	-0.0622	-0.0179	-0.0756	-0.0311
	(0.0218)	(0.0316)	(0.0235)	(0.0321)
Born Abroad	-0.2355	-0.1738	-0.2204	-0.1389
	(0.1483)	(0.1802)	(0.1409)	(0.1858)
Catholic	0.3663	-0.0679	0.4047	-0.1136
	(0.1845)	(0.2571)	(0.1931)	(0.2438)
Other Christian	0.1348	-0.4336	0.1553	-0.4118
	(0.1426)	(0.2520)	(0.1646)	(0.2298)
Mother Graduated from High School	0.0840	0.2125	0.1162	0.2113
	(0.1304)	(0.1396)	(0.1007)	(0.1567)
Mother Has some College	0.2578	0.2665	0.3022	0.3161
	(0.1566)	(0.1511)	(0.1220)	(0.1572)
Mother Graduated from College	0.4753	0.5506	0.5196	0.5356
	(0.1234)	(0.1578)	(0.1155)	(0.1572)
Father Graduated from High School	0.2637	0.3068	0.2923	0.3402
	(0.0828)	(0.1601)	(0.0982)	(0.1376)
Father Has some College	0.3422	0.4338	0.3671	0.3918
	(0.0945)	(0.1338)	(0.0972)	(0.1448)
Father Graduated from College	0.6620	0.5170	0.7024	0.5537
	(0.1164)	(0.2143)	(0.1114)	(0.1797)
Family Income: $15,000 to $25,000	0.0362	-0.2284	0.0358	-0.1160
	(0.1241)	(0.2336)	(0.1101)	(0.2020)
Family Income: $25,000 to $35,000	0.2346	0.2442	0.2386	0.3154
	(0.1429)	(0.2207)	(0.1420)	(0.2002)
Family Income: $35,000 to $50,000	0.2041	0.2530	0.2138	0.3072
	(0.2027)	(0.2386)	(0.1541)	(0.2172)

(continued)

Table 3 (continued)

	Specification			
	PMSA-Level		County-Level	
	8th Grade	10th Grade	8th Grade	10th Grade
Explanatory Variables	(1)	(2)	(3)	(4)
Family Income: $50,000 to $100,000	0.4834	0.7627	0.5218	0.8201
	(0.2212)	(0.2228)	(0.2221)	(0.2172)
Family Income more than $100,000	0.8367	0.7971	0.7767	0.9573
	(0.2922)	(0.3550)	(0.2996)	(0.4005)
Public School Student to Teacher Ratio	-0.0659	0.0191	0.0453	0.0280
	(0.0554)	(0.0760)	(0.0519)	(0.0535)
Public School Expenditures per Pupil (000s)	0.3797	0.1734	0.1921	0.1585
	(0.1083)	(0.1486)	(0.0807)	(0.0691)
Public School Graduation Rate	1.9568	0.9095	0.7058	0.7565
	(1.9711)	(1.3270)	(1.7754)	(1.4529)
Private School Student to Teacher Ratio	0.2497	0.1674	0.1822	0.0967
	(0.0891)	(0.1028)	(0.0734)	(0.0778)
Serious Crime Rate	-8.4936	-0.8720	-1.4113	3.3332
	(3.9046)	(5.6029)	(4.1950)	(3.9605)
Poverty Rate (Ages 5-17)	0.0595	-3.4377	-0.3020	-1.4258
	(1.2533)	(1.8194)	(0.9230)	(1.1545)
Distance to Closest Private School (Km)	-0.0178	-0.0564	-0.0062	-0.0030
	(0.0252)	(0.0314)	(0.0106)	(0.0153)
Distance Squared / 100	0.0227	0.1075	0.0039	-0.0008
	(0.0628)	(0.0760)	(0.0079)	(0.0111)
Black Share of Population (Ages 5-18)	2.6349	3.9555	1.9989	2.5790
	(0.9944)	(1.3288)	(0.7387)	(0.9354)
Mean of Dependent Variable	0.1117	0.0994	0.1003	0.0884
Avg. Derivative Adj. Factor	0.1406	0.1312	0.1297	0.1208
Sample Size	2553	1462	2870	1697

Notes: (1) The sample consists of Latino schoolchildren. (2) Standard errors are reported in parentheses and are adjusted for including multiple observations per PMSA or county. (3) All estimates are adjusted for oversample of private school students. (4) In addition to the reported variables, all specifications include a constant, region controls and dummy variables for age, and missing mother's education, father's education, religion, birth place, and family income. (5) The average derivative (or marginal effect) is equal to the adjustment factor multiplied by the coefficient. See text for more details.

Table 4. Additional Probit Regressions for Probability of Attending Private School

	Specification			
	PMSA-Level		County-Level	
	8th Grade	10th Grade	8th Grade	10th Grade
	(1)	(2)	(3)	(4)
I. Excludes Distance Variable				
Black Share of Population	2.6893	3.9309	2.0230	2.5835
(Ages 5-18)	(0.9770)	(1.3546)	(0.7308)	(0.9400)
Mean of Dependent Variable	0.1117	0.0994	0.1003	0.0884
Avg. Derivative Adj. Factor	0.1407	0.1320	0.1297	0.1208
Sample Size	2553	1462	2870	1697
II. Removes Missing Obs.				
Black Share of Population	2.1667	3.7622	2.4593	3.5441
(Ages 5-18)	(1.1358)	(1.4465)	(0.7527)	(0.9337)
Mean of Dependent Variable	0.1031	0.0895	0.0915	0.0786
Avg. Derivative Adj. Factor	0.1353	0.1191	0.1242	0.1084
Sample Size	1958	1188	2230	1397
III. Includes 8th Grade Test Scores				
Black Share of Population		4.6478		2.8247
(Ages 5-18)		(1.3711)		(0.9703)
Mean of Dependent Variable		0.0987		0.0874
Avg. Derivative Adj. Factor		0.1261		0.1164
Sample Size		1394		1626

Notes: (1) See notes to Table 3. (2) All specifictaions include the same control variables as those included in the specifications reported in Table 3. The specifications in panel (II) do not include missing birth place, religion and family income.

Table 5
Interaction Probit Regressions for Probability of Attending Private School Specification

Explanatory Variables	PMSA-Level 8th Grade (1)	PMSA-Level 10th Grade (2)	County-Level 8th Grade (3)	County-Level 10th Grade (4)
(I) White	0.5012	0.3443	0.2869	0.1317
	(0.1963)	(0.1722)	(0.1374)	(0.1450)
Black	0.1877	0.3069	0.3140	0.4037
	(0.2572)	(0.2667)	(0.2203)	(0.2637)
Black Share of Population (Ages 5-18)	2.8504	3.0049	1.6941	1.8943
	(0.9346)	(0.8801)	(0.5167)	(0.7484)
Black Share * White	-1.1000	-0.3765	0.5138	1.0836
	(0.9223)	(0.7238)	(0.4790)	(0.7081)
Black Share*Black	-0.8782	-1.1026	-1.0844	-1.2714
	(1.0027)	(1.0986)	(0.7274)	(0.8653)
Mean of Dependent Variable	0.1530	0.1371	0.1227	0.1052
Avg. Derivative Adj. Factor	0.1849	0.1669	0.1497	0.1270
Sample Size	16,386	10,313	20,870	13,727
(II) Black Share of Population (Ages 5-18)	2.4944	2.9768	2.4435	2.7477
	(1.2977)	(1.4053)	(0.7504)	(1.0087)
Black Share * Family Income ($35,000+)	-1.3449	1.2312	-0.1528	1.5905
	(1.7202)	(1.1916)	(0.7831)	(0.8963)
Mean of Dependent Variable	0.1014	0.0888	0.0901	0.0781
Avg. Derivative Adj. Factor	0.1356	0.1215	0.1243	0.1099
Sample Size	2094	1260	2382	1478
(III) Black Share of Population (Ages 5-18)	2.5176	3.9775	1.9510	2.4275
	(1.0264)	(1.4416)	(0.7281)	(0.9635)
Black Share * College Educated Parents	0.3534	-0.0555	0.1488	0.4071
	(0.7199)	(1.4454)	(0.5602)	(0.8477)
Mean of Dependent Variable	0.1117	0.0994	0.1003	0.0884
Avg. Derivative Adj. Factor	0.1405	0.1312	0.1296	0.1206
Sample Size	2553	1462	2870	1697

Notes: (1) The sample consists of Latino, black and white schoolchildren in Panel (1), and the sample consists of Latino schoolchildren in Panels (II) and (III). (2) See notes to Table 3. (3) All specifictaions include the same control variables as those included in the specifications reported in Table 3.

Appendix. Means of Selected Variables

	Specification			
	PMSA-Level		County-Level	
	8th Grade (1)	10th Grade (2)	8th Grade (3)	10th Grade (4)
Female	0.5256	0.5195	0.5096	0.5077
Number of Siblings	2.8139	2.7369	2.7920	2.7048
Born Abroad	0.1215	0.1231	0.1254	0.1223
Catholic	0.5970	0.6556	0.5965	0.6459
Other Christian	0.1858	0.1778	0.1953	0.1914
Mother Graduated from High School	0.2009	0.2055	0.2002	0.1988
Mother Has some College	0.2881	0.2815	0.2937	0.2917
Mother Graduated from College	0.0733	0.0808	0.0664	0.0730
Father Graduated from High School	0.1690	0.1633	0.1745	0.1686
Father Has some College	0.2368	0.2541	0.2461	0.2573
Father Graduated from College	0.1222	0.1261	0.1087	0.1096
Family Income: $15,000 to $25,000	0.1913	0.1980	0.1977	0.2075
Family Income: $25,000 to $35,000	0.1364	0.1569	0.1377	0.1588
Family Income: $35,000 to $50,000	0.1216	0.1298	0.1159	0.1208
Family Income: $50,000 to $100,000	0.0798	0.0966	0.0737	0.0839
Family Income more than $100,000	0.0121	0.0147	0.0111	0.0134
Public School Student-Teacher Ratio	19.3323	19.2087	19.2429	19.0260
Public School Expenditures per Pupil	5.3212	5.2330	5.1822	5.0928
Public School Graduation Rate	0.9364	0.9572	0.9367	0.9551
Private School Student-Teacher Ratio	14.5817	14.5295	14.4760	14.4267
Serious Crime Rate	0.0712	0.0756	0.0686	0.0710
Poverty Rate (Ages 5-17)	0.2254	0.2316	0.2450	0.2458
Dist. to Closest Private School (Km)	2.3935	2.5528	5.3410	6.5620
Distance Squared / 100	0.3377	0.3322	3.3560	4.5496
Black Share	0.1336	0.1228	0.1265	0.1093
Sample Size	2553	1462	2870	1697

Note: Samples are the same as those used in Table 3.

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